

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims.

1. (PREVIOUSLY PRESENTED) An active magnetic bearing with autodetection of position, the bearing comprising at least first and second opposing electromagnets forming stators disposed on either side of a ferromagnetic body forming a rotor and held without contact between said electromagnets, the first and second electromagnets each comprising a magnetic circuit essentially constituted by a first ferromagnetic material and co-operating with said ferromagnetic body to define an airgap, together with an excitation coil powered from a power amplifier whose input current is servo-controlled as a function of the position of the ferromagnetic body relative to the magnetic circuits of the first and second electromagnets, the position of the ferromagnetic body being measured from the inductance detected between the two electromagnets in response to simultaneous injection into both opposing electromagnets of a sinusoidal current at a frequency that is greater than the closed loop passband of the system,

the bearing being characterized in that the magnetic circuit of each electromagnet further includes a portion in the vicinity of the excitation coil that uses a second ferromagnetic material having magnetic permeability that is lower than that of the first material and electrical resistivity that is higher than that of the first material so as to encourage the passage of the high frequency magnetic fields that are generated in the bearing.

2. (PREVIOUSLY PRESENTED) A bearing according to claim 1, characterized in that the low permeability and high resistivity portion is formed by a piece made of powder comprising grains of magnetic material that are electrically insulated from one another.

3. (ORIGINAL) A bearing according to claim 2, characterized in that the powder comprises grains of iron that are electrically insulated from one another.

4. (PREVIOUSLY PRESENTED) A bearing according to claim 1, characterized in that the ferromagnetic body forming the rotor includes at least one portion of permeability that is smaller and of resistivity that is greater than the remainder of said body so as to encourage the passage of high frequency magnetic fields, said portion being disposed substantially in register with the low permeability and high resistivity portion formed in the electromagnet.
5. (PREVIOUSLY PRESENTED) A bearing according to claim 4, characterized in that the low permeability and high resistivity portion of the rotor-forming body is formed by a part made of powder comprising grains of magnetic material that are electrically insulated from one another.
6. (ORIGINAL) A bearing according to claim 5, characterized in that the powder comprises grains of iron that are electrically insulated from one another.
7. (PREVIOUSLY PRESENTED) A bearing according claim 4, characterized in that the rotor-forming body includes a stack of ferromagnetic laminations, the laminations present in the low permeability and high resistivity portion presenting thickness that is smaller than the thickness of those other laminations in the stack.
8. (PREVIOUSLY PRESENTED) A bearing according to claim 1, characterized in that the low permeability and high resistivity portion(s) present(s) magnetic permeability of about 100.
9. (PREVIOUSLY PRESENTED) A bearing according to claim 1, characterized in that the low permeability and high resistivity portion(s) present(s) electrical resistivity of about 50  $\Omega$ m.

10. (PREVIOUSLY PRESENTED) A bearing according to claim 1, characterized in that the active magnetic bearing is of the axial type.

11. (PREVIOUSLY PRESENTED) A bearing according to claim 1, characterized in that the active magnetic bearing is of the radial type.

12. (PREVIOUSLY PRESENTED) A bearing according to claim 3, characterized in that:

the ferromagnetic body forming the rotor includes at least one portion of permeability that is smaller and of resistivity that is greater than the remainder of said body so as to encourage the passage of high frequency magnetic fields, said portion being disposed substantially in register with the low permeability and high resistivity portion formed in the electromagnet;

the low permeability and high resistivity portion of the rotor-forming body is formed by a part made of powder comprising grains of magnetic material that are electrically insulated from one another;

the powder comprises grains of iron that are electrically insulated from one another.

13. (PREVIOUSLY PRESENTED) A bearing according to claim 4, characterized in that the low permeability and high resistivity portion(s) present(s) magnetic permeability of about 100.

14. (CURRENTLY AMENDED) A bearing according to claim 7, characterized in that: the low permeability and high resistivity portion(s) present(s) magnetic permeability of about 100;

the low permeability and high resistivity portion(s) present(s) electrical resistivity of about ~~50  $\Omega$ m~~ 50  $\Omega$ m; and

the active magnetic bearing is of the axial type; and

~~the active magnetic bearing is of the radial type.~~

15. (NEW) A bearing according to claim 7, characterized in that:
- the low permeability and high resistivity portion(s) present(s) magnetic permeability of about 100;
  - the low permeability and high resistivity portion(s) present(s) electrical resistivity of about 50  $\Omega\text{m}$ ; and
  - the active magnetic bearing is of the radial type.